C L A I M S

1. A spectacle lens evaluation method characterized by executing:

the measurement step of, when a first surface of a target lens is irradiated with light, measuring optical paths of exit light beams emerging from a plurality of measurement points on a second surface on an opposite side;

the target lens dioptric power distribution calculation step of calculating a dioptric power distribution of the target lens on the basis of the measurement result;

the design lens spatial model construction step of constructing a design lens spatial model imitating optical characteristics of the target lens on the basis of design values registered in advance;

the light exit position calculation step of calculating a light exit position on a first surface of the design lens spatial model, assuming that light directly opposite to the exit light having undergone optical path measurement is incident at the same position as the measurement point on a second surface of the design lens spatial model;

the exit light optical path calculation step of calculating optical paths of exit light beams emerging from a plurality of measurement points on the second surface of the design lens spatial model,

assuming that the same light as that in the measurement step is applied at the calculated light exit position of the design lens spatial model;

the design lens dioptric power distribution calculation step of calculating a dioptric power distribution of the design lens spatial model on the basis of the calculated optical paths of the exit light beams; and

the error distribution calculation step of calculating an error distribution of the dioptric power distribution of the target lens with respect to the dioptric power distribution of the design lens spatial model.

2. A spectacle lens evaluation method according to claim 1, characterized in that

the spectacle lens evaluation method executes the pass/fail determination step of determining "pass"/"fail" of the target lens by collating the error distribution calculated in the error distribution calculation step with a preset pass/fail determination condition,

the pass/fail determination condition is constituted by determination area segmentation for segmenting the target lens into a plurality of determination areas, and an error allowable condition set for each of the determination areas segmented in accordance with the determination area segmentation, and

in the pass/fail determination step, the error distribution is segmented into a plurality of determination areas in accordance with the determination area segmentation, and "fail" is determined if at least one of the error distributions segmented as the plurality of determination areas does not satisfy the error allowable condition.

3. A spectacle lens evaluation method according to claim 2, characterized in that

the error allowable condition is constituted by a dioptric power allowable error set for each determination area, and an allowable ratio obtained by setting, for each determination area, an allowance for a ratio of the number of measurement points at which the allowable error is not satisfied to the total number of measurement points in the determination area, and

in the pass/fail determination step, a ratio of the number of measurement points at which the allowable error is not satisfied is calculated for each determination area, and "fail" is determined if at least one of the ratios calculated for the respective determination areas does not satisfy the allowable ratio.

4. A spectacle lens evaluation method according to claim 2, characterized in that the stricter error allowable conditions are set for determination areas closer to an optical center of the target lens.

5. A spectacle lens evaluation method according to claim 2, characterized in that the stricter error allowable conditions are set for determination areas closer to distance and near portions of the target lens.

6. A spectacle lens evaluation method according to claim 2, characterized in that in the pass/fail determination step, only a frame area specified by frame shape data of the target lens is set as the determination area, and a portion located outside the frame area of the target lens is excluded from the pass/fail determination.

7. A spectacle lens evaluation apparatus characterized by comprising:

a dioptric power distribution measuring device which, when a first surface of a target lens is irradiated with light, measures optical paths of exit light beams emerging from a plurality of measurement points on a second surface on an opposite side, and calculates a dioptric power distribution of the target lens on the basis of the measurement result;

storage means for storing design values for the target lens;

design lens spatial model construction means for constructing a design lens spatial model imitating optical characteristics of the target lens on the basis of the design values;

light exit position calculation means for calculating a light exit position on a first surface of the design lens spatial model, assuming that light directly opposite to the exit light having undergone optical path measurement is incident at the same position as the measurement point on a second surface of the design lens spatial model;

exit light optical path calculation means for calculating optical paths of exit light beams emerging from a plurality of measurement points on the second surface of the design lens spatial model, assuming that the same light as that in measurement by said dioptric power distribution measuring device is applied at the calculated light exit position of the design lens spatial model;

design lens dioptric power distribution calculation means for calculating a dioptric power distribution of the design lens spatial model on the basis of the calculated optical paths of the exit light beams; and

error distribution calculation means for calculating an error distribution of the dioptric power distribution of the target lens with respect to the dioptric power distribution of the design lens spatial model.

8. A spectacle lens evaluation apparatus according to claim 7, characterized in that

said spectacle lens evaluation apparatus comprises

pass/fail determination condition storage means for storing a pass/fail determination condition constituted by determination area segmentation for segmenting the target lens into a plurality of determination areas, and an error allowable condition set for each of the determination areas segmented in accordance with the determination area segmentation, and

pass/fail determination means for determining "pass"/"fail" of the target lens by collating the error distribution calculated by said error distribution calculation means with the pass/fail determination condition, and

said pass/fail determination means segments the error distribution into a plurality of determination areas in accordance with the determination area segmentation, and determines "fail" if at least one of the error distributions segmented as the plurality of determination areas does not satisfy the error allowable condition.

9. A spectacle lens evaluation apparatus according to claim 8, characterized in that

the error allowable condition is constituted by a dioptric power allowable error set for each determination area, and an allowable ratio obtained by setting, for each determination area, an allowance for a

ratio of the number of measurement points at which the allowable error is not satisfied to the total number of measurement points in the determination area, and

said pass/fail determination means calculates a ratio of the number of measurement points at which the allowable error is not satisfied for each determination area, and determines "fail" if at least one of the ratios calculated for the respective determination areas does not satisfy the allowable ratio.

10. A spectacle lens evaluation apparatus according to claim 8, characterized in that the stricter error allowable conditions are set for determination areas closer to an optical center of the target lens.

11. A spectacle lens evaluation apparatus according to claim 8, characterized in that the stricter error allowable conditions are set for determination areas closer to distance and near portions of the target lens.

12. A spectacle lens evaluation apparatus according to claim 8, characterized in that said pass/fail determination means sets only a frame area specified by frame shape data of the target lens as the determination area, and excludes a portion located outside the frame area of the target lens from the pass/fail determination.

13. A spectacle lens manufacturing method of manufacturing a spectacle lens on the basis of order

data from a spectacle lens orderer side, characterized by comprising:

cutting/polishing a lens on the basis of the order data;

when a first surface of the cut/polished lens is irradiated with light, measuring optical paths of exit light beams emerging from a plurality of measurement points on a second surface on an opposite side, and calculating a dioptric power distribution of the ordered lens on the basis of the measurement result;

calculating a design lens dioptric power distribution from design values for the ordered lens based on the order data; and

evaluating the lens by calculating an error distribution of an actual dioptric power distribution with respect to the design lens dioptric power distribution.

14. A spectacle lens manufacturing system characterized by comprising:

a computer placed on a spectacle lens orderer side;

a manufacturer side computer which is so connected to receive order data sent from said orderer side computer;

storage means for storing design values for an ordered lens based on the order data;

a dioptric power distribution measuring device

which, when a first surface of an ordered lens manufactured on the order data is irradiated with light, measures optical paths of exit light beams emerging from a plurality of measurement points on a second surface on an opposite side, and calculates a dioptric power distribution of the ordered lens on the basis of the measurement result;

design lens dioptric power distribution calculation means for calculating a dioptric power distribution on the basis of the design values; and

error distribution calculation means for calculating an error distribution of the dioptric power distribution measured by said dioptric power distribution measuring device with respect to the dioptric power distribution calculated by said design lens dioptric power distribution calculation means.

15. A spectacle lens manufacturing method of manufacturing a plurality of spectacle lenses with the same specifications, characterized by comprising:

molding a lens on the basis of manufacturing instruction data representing specifications of a lens to be manufactured;

when a first surface of the molded lens is irradiated with light, measuring optical paths of exit light beams emerging from a plurality of measurement points on a second surface on an opposite side, and calculating a dioptric power distribution of the lens on

the basis of the measurement result;

calculating a design lens dioptric power distribution from design values for the lens based on the manufacturing instruction data; and

calculating an actual error distribution of a dioptric power distribution which corresponds the design lens dioptric power distribution, thus evaluating the lens.

16. A spectacle lens manufacturing system for manufacturing a plurality of spectacle lenses with the same specifications, characterized by comprising:

a computer which inputs manufacturing instruction data representing specifications of a lens to be manufactured;

storage means for storing design values for a lens based on the manufacturing instruction data;

a dioptric power distribution measuring device which, when a first surface of a lens manufactured on the basis of the manufacturing instruction data is irradiated with light, measures optical paths of exit light beams emerging from a plurality of measurement points on a second surface on an opposite side, and calculates a dioptric power distribution of the lens on the basis of the measurement result;

design lens dioptric power distribution calculation means for calculating a dioptric power distribution on the basis of the design values; and

error distribution calculation means for calculating an error distribution of the dioptric power distribution measured by said dioptric power distribution measuring device with respect to the dioptric power distribution calculated by said design lens dioptric power distribution calculation means.

17. An evaluation method for a lens-like mold used for spectacle lens molding, characterized by executing:

the measurement step of, when a first surface of a target mold is irradiated with light, measuring optical paths of exit light beams emerging from a plurality of measurement points on a second surface on an opposite side;

the target mold dioptric power distribution calculation step of calculating a dioptric power distribution of the target mold on the basis of the measurement result;

the design mold spatial model construction step of constructing a design mold spatial model imitating optical characteristics of the target mold on the basis of design values registered in advance;

the light exit position calculation step of calculating a light exit position on a first surface of the design mold spatial model, assuming that light directly opposite to the exit light having undergone optical path measurement is incident at the same

position as the measurement point on a second surface of the design mold spatial model;

the exit light optical path calculation step of calculating optical paths of exit light beams emerging from a plurality of measurement points on the second surface of the design mold spatial model, assuming that the same light as that in the measurement step is applied at the calculated light exit position of the design mold spatial model;

the design mold dioptric power distribution calculation step of calculating a dioptric power distribution of the design mold spatial model on the basis of the calculated optical paths of the exit light beams; and

the error distribution calculation step of calculating an error distribution of the dioptric power distribution of the target mold with respect to the dioptric power distribution of the design mold spatial model.

18. An evaluation apparatus for a lens-like mold used for spectacle lens molding, characterized by comprising:

a dioptric power distribution measuring device which, when a first surface of a target mold is irradiated with light, measures optical paths of exit light beams emerging from a plurality of measurement points on a second surface on an opposite side, and

calculates a dioptric power distribution of the target mold on the basis of the measurement result;

storage means for storing design values for the target mold;

design mold spatial model construction means for constructing a design mold spatial model imitating optical characteristics of the target mold on the basis of the design values;

light exit position calculation means for calculating a light exit position on a first surface of the design mold spatial model, assuming that light directly opposite to the exit light having undergone optical path measurement is incident at the same position as the measurement point on a second surface of the design mold spatial model;

exit light optical path calculation means for calculating optical paths of exit light beams emerging from a plurality of measurement points on the second surface of the design mold spatial model, assuming that the same light as that in measurement by said dioptric power distribution measuring device is applied at the calculated light exit position of the design mold spatial model;

design mold dioptric power distribution calculation means for calculating a dioptric power distribution of the design mold spatial model on the basis of the calculated optical paths of the exit light

beams; and

error distribution calculation means for calculating an error distribution of the dioptric power distribution of the target mold with respect to the dioptric power distribution of the design mold spatial model.